II AMENDMENTS

2.1 AMENDMENTS TO THE CLAIMS

Amend claims 1-40 without acquiescence or prejudice as follows.

--1. (Amended) A communication system comprising:

a digital input circuit [for] generating a plurality of digital input signals;

a signature circuit [for] coupled to the digital input circuit and generating a plurality of signature signals, where each of the plurality of signature signals is [being] generated in response to one of the plurality of digital input signals [generated by said digital input circuit] and where each of the plurality of signature signals has a signature that is different from the signature of each of the other ones of the plurality of signature signals;

a multiplexing circuit [for] coupled to the signature circuit and generating a multiplexed signature signal by combining the plurality of signature signals [generated by said signature circuit];

a transmitter [for] coupled to the multiplexing circuit and transmitting the multiplexed signature signal [generated by said multiplexing circuit] to a remote location;

a receiver located at the remote location [for] and receiving the multiplexed signature signal transmitted by said transmitter; and

a demultiplexing circuit [for] coupled to the receiver and generating a plurality of digital output signals, where each of the plurality of digital output signals [corresponding] corresponds to a different one of the plurality of digital input signals generated by said digital input circuit.

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--2. (Amended) A communication [The] system as set forth in claim 1 [above], wherein said system provides for communication of digital signals to the remote location; [wherein] said digital input circuit [includes a circuit for] generating the plurality of digital signals to be communicated to the remote location; and [wherein] said signature circuit [includes a circuit for] generating each of the plurality of signature signals in response to [each] one of the plurality of digital signals [generated by said digital digital] input circuit] by modulating the digital signals with a signature signal for communication to the remote location.

--3. (Amended) A communication [The] system as set forth in claim 1 [above], wherein said system provides for location of said transmitter; said system further comprising a location processor [for] coupled to the demultiplexing circuit and processing the digital output signals [generated by said demultiplexing circuit to determine] and determining the location of said transmitter.

--4. (Amended) A communication [The] system as set forth in claim 1 [above], wherein said system provides for location of said receiver; said system further comprising a location processor [for] coupled to the demultiplexing circuit and processing the digital output signals [generated by said demultiplexing circuit to determine] and determining the location of said receiver.

--5. (Amended) A filter processor system comprising:

an analog input device [for] generating an analog input signal;

an analog to digital converter [for] coupled to the analog input device and generating digital signal samples in response to the analog input signal [generated by said analog input device]; and

an integrated circuit stored program digital computer [for] coupled to the analog to digital converter and generating an output signal [under control of a stored program] in response to the digital signal samples, said integrated circuit stored program digital computer including

    a)   an integrated circuit read only memory [for] storing a computer program,

    b)   an integrated circuit input [logic for inputting] circuit coupled to the integrated circuit read only memory and to the analog to digital converter and generating input signal samples in response to the digital signal samples [generated by said analog to digital converter under control of] and in response to the computer program [stored in said integrated circuit read only memory],

    b)   an integrated circuit random access memory [for] storing digital signal samples,

    c)   an integrated circuit writing [logic for] circuit coupled to the integrated circuit read only memory, the integrated circuit input circuit, and the integrated circuit random access memory and writing the [digital] input signal samples [input by said integrated circuit input circuit] generated by the integrated circuit input logic to said integrated circuit random access memory in response to the computer program,

d) <u>an</u> integrated circuit accessing [logic for] <u>circuit coupled to the integrated circuit random access memory and to the integrated circuit read only memory and</u> accessing digital signal samples [from] <u>stored by</u> said integrated circuit random access memory [under control of] <u>in response to</u> the computer program [stored by said integrated circuit read only memory],

e) <u>an</u> integrated circuit processing [logic for] <u>circuit coupled to the integrated circuit accessing circuit and to the integrated circuit read only memory and generating filter processed signal samples by</u> filter processing the digital signal samples accessed [from said integrated circuit random access memory] by said accessing circuit [under control of] <u>in response to</u> the computer program [stored by said integrated circuit read only memory], and

c) <u>an</u> integrated circuit output [logic for] <u>circuit coupled to the integrated circuit processing circuit and to the integrated circuit read only memory and</u> generating an output signal in response to the [processing of the digital] <u>filter processed</u> signal samples [by said integrated circuit processing logic under control of] <u>and in response to</u> the computer program [stored by said integrated circuit read only memory].

--6. (Amended) <u>A communication</u> [The] system as set forth in claim 1 [above], wherein said signature circuit includes a plurality of signature generators each <u>signature generator</u> generating a <u>signature signal having a</u> signature different from the signatures [of] <u>of the signature signals generated by</u> the

other signature generators in response to the plurality of digital signals [generated by said digital digital input circuit].

--7. (Amended) A communication [The] system as set forth in claim 1 [above], [wherein] said multiplexing circuit [includes a circuit for] generating the multiplexed signature signal by combining the signature signals generated by said signature circuit with wired circuit connections.

--8. (Amended) A communication system comprising:

an antenna [for] receiving a signature signal;

an amplifier circuit [for] coupled to the antenna and generating an amplified signature signal by amplifying the signature signal received by said antenna;

a single bit digital sampling circuit [for] coupled to the amplifier circuit and generating single bit digital input signature signal samples by sampling the [input] amplified signature signal [amplified by said amplifier circuit];

an input memory [for] coupled to the single bit digital sampling circuit and storing the single bit digital input signature signal samples [generated by said single bit digital sampling circuit];

a plurality of single bit digital correlators, wherein each of said single bit digital correlators includes

a) a digital reference memory [for] storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference [memories] memory in each of the other single bit digital correlators [,] and

b) a single bit correlator circuit [for] coupled to the input memory and to the digital reference memory and generating multiple bit digital correlated output signal samples by

correlation filtering of the single bit
digital input signature signal samples
stored by said input memory in response to
the digital reference signature signal
samples; [stored by said digital reference
memory, and]

[c)] an output memory [for] <u>coupled to the single bit</u>
<u>correlator circuit and</u> storing the multiple bit digital
correlated output signal samples [generated by said correlator
circuit];

an integrated circuit stored program computer [for]
<u>coupled to the output memory and</u> generating an output signal
[under control of a stored program] <u>in response to the multiple</u>
<u>bit digital correlated output signal</u> samples, said integrated
circuit stored program computer including

    a)   an integrated circuit read only memory [for]
        storing a computer program,

    b)   <u>an integrated circuit processing</u> [logic for]
        <u>circuit coupled to the integrated circuit</u>
        <u>read only memory and to the output memory and</u>
        <u>generating processed correlated signal</u>
        <u>samples by</u> processing the digital correlated
        output signal samples stored by said output
        memory [in each of said single bit digital
        correlators under control of] <u>in response to</u>
        the computer program [stored by said
        integrated circuit read only memory], and

    c)   <u>an</u> integrated circuit output [logic for]
        <u>circuit coupled to the integrated circuit</u>
        <u>read only memory and to the integrated</u>
        <u>processing circuit and</u> generating an output
        display signal in response to the [processing
        of the digital] <u>processed</u> correlated [output]
        signal samples [by said integrated circuit

processing logic under control of] <u>and</u> <u>in</u>
<u>response</u> <u>to</u> the computer program [stored by
said integrated circuit read only memory];
and

an operator display [for] <u>coupled</u> <u>to</u> <u>the</u> <u>integrated</u>
<u>circuit</u> <u>output</u> <u>circuit</u> <u>and</u> displaying information to an operator
in response to the output display signal [generated by said
computer output circuit].

--9.   (Amended) <u>A</u> <u>communication</u> [The] system as set forth
in claim 1 [above], wherein said transmitter includes a seismic
transmitter [for] transmitting the multiplexed signature signal
[generated by said multiplexing circuit] to the remote location
as seismic signals.

--10.   (Amended) <u>A</u> <u>communication</u> [The] system as set forth
in claim 1 [above], wherein said transmitter includes an
underwater acoustic transmitter [for] transmitting the
multiplexed signature signal [generated by said multiplexing
circuit] to the remote location as underwater acoustic signals.

--11.   (Amended) A communication system [for receiving a
plurality of input signature signals each transmitted from a
different remote location and each input signature signal having
a signature that is different from the signature of each of the
other input signature signals, said communication system]
comprising:

an antenna [for] receiving [the] <u>a</u> plurality of input
signature signals<u>,</u> <u>wherein</u> <u>each</u> <u>of</u> <u>the</u> <u>plurality</u> <u>of</u> <u>input</u>
<u>signature</u> <u>signals</u> <u>are</u> <u>transmitted</u> <u>from</u> <u>a</u> <u>different</u> <u>remote</u>
<u>location,</u> <u>and</u> <u>wherein</u> each <u>of</u> <u>the</u> <u>input</u> <u>signature</u> <u>signals</u> <u>has</u>
[having] a signature that is different from the signature of each
of the other input signature signals transmitted from the
different remote locations;

an amplifier circuit [for] <u>coupled</u> <u>to</u> <u>the</u> <u>antenna</u> <u>and</u> <u>generating</u> <u>an</u> <u>amplified</u> <u>signal</u> <u>by</u> amplifying the plurality of input signature signals [received by said antenna];

a digital sampling circuit [for] <u>coupled</u> <u>to</u> <u>the</u> <u>amplifier</u> <u>circuit</u> <u>and</u> generating digital input signature signal samples by sampling the [signature signals] amplified <u>signal</u> [by said amplifier circuit];

an input memory [for] <u>coupled</u> <u>to</u> <u>the</u> <u>digital</u> <u>sampling</u> <u>circuit</u> <u>and</u> storing the digital input signature signal samples [generated by said digital sampling circuit];

a plurality of digital correlators, wherein each of said digital correlators includes

   a)   a digital reference memory [for] storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators [,] <u>and</u>

   b)   a correlator circuit [for] <u>coupled</u> <u>to</u> <u>the</u> <u>digital reference</u> <u>memory</u> <u>and</u> <u>to</u> <u>the</u> <u>input</u> <u>memory</u> <u>and</u> generating digital correlated output signal samples by correlation filtering [of] the digital input signature signal samples [stored by said input memory] in response to the digital reference signature signal samples; [stored by said digital reference memory, and]

[c)] an output memory [for] <u>coupled</u> <u>to</u> <u>the</u> <u>correlator</u> <u>circuit</u> <u>in</u> <u>each</u> <u>of</u> <u>the</u> <u>plurality</u> <u>of</u> <u>digital</u> <u>correlators</u> <u>and</u> storing the digital correlated output signal samples [generated by said correlator circuit];

an integrated circuit stored program computer [for] <u>coupled</u> <u>to</u> <u>the</u> <u>output</u> <u>memory</u> <u>and</u> generating an output signal [under control of a stored program] <u>in</u> <u>response</u> <u>to</u> <u>the</u> <u>digital</u>

correlated <u>output signal samples</u>, said integrated circuit stored program computer including

a)   an integrated circuit read only memory [for] storing a computer program,

b)   <u>an</u> integrated circuit processing [logic for] <u>circuit coupled to the integrated circuit read only memory and to the output memory and generating processed correlated output signal samples by</u> processing the digital correlated output signal samples stored by said output memory [in each of said digital correlators under control of] <u>in response to</u> the computer program [stored by said integrated circuit read only memory], and

c)   <u>an</u> integrated circuit output [logic for] <u>circuit coupled to the integrated circuit processing circuit and to the integrated circuit read only memory and</u> generating an output display signal in response to the [processing of the digital correlated] <u>processed</u> output signal samples [by said integrated circuit processing logic under control of] <u>and in response to</u> the computer program [stored by said integrated circuit read only memory]; and

an operator display [for] <u>coupled to the integrated circuit output circuit and</u> displaying information [to an operator] in response to the output display signal [generated by said computer output circuit].

--12.   (Amended)   A communication system comprising:

an antenna [for] receiving [a] <u>an input</u> signature signal;

<u>an</u> amplifier circuit [for amplifying the] <u>coupled to the antenna and generating an amplified</u> signature signal

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[received by said antenna] <u>in</u> <u>response</u> <u>to</u> <u>the</u> <u>input</u> <u>signature</u> <u>signal</u>;

a [single bit digital] sampling circuit [for] <u>coupled</u> <u>to</u> <u>the</u> <u>amplifier</u> <u>circuit</u> <u>and</u> generating [single bit digital] input signature signal samples by sampling the [input] <u>amplified</u> signature signal [amplified by said amplifier circuit];

an input memory [for] <u>coupled</u> <u>to</u> <u>the</u> <u>sampling</u> <u>circuit</u> <u>and</u> storing the [single bit digital] input signature signal samples [generated by said single bit digital sampling circuit]; [and]

a plurality of [single bit digital] correlators, wherein each of said [single bit digital] correlators includes

      a)   a [single bit digital] reference memory [for] storing [single bit digital] reference signature signal samples having a signature that is different from the signatures of the [single bit digital] reference signature samples stored by the [single bit digital] reference [memories] <u>memory</u> in each of the other [single bit digital] correlators [,] and

      b)   a [single bit digital] correlator circuit [for] <u>coupled</u> <u>to</u> the <u>reference</u> <u>memory</u> <u>and</u> <u>to</u> <u>the</u> <u>input</u> <u>memory</u> <u>and</u> generating [multiple bit digital] correlated output signal samples by correlation filtering [of] the [single bit digital] input signature signal samples [stored by said input memory] in response to the [single bit digital] reference signature signal samples; [stored by said single bit digital reference memory,] and

    [c)] an output memory [for] <u>coupled</u> <u>to</u> <u>the</u> <u>plurality</u> <u>of</u> <u>correlators</u> <u>and</u> storing the [multiple bit digital] correlated output signal samples [generated by said single bit digital correlator circuit].

--13. (Amended) A communication system comprising:

a plurality of signature sources, each [for] of the plurality of signature sources transmitting a signature signal to a receiver that is located at a remote location, wherein each of said signature sources includes

a) a signature generator [for] generating a signature signal having a signature that is different from the signature of [each of] the other signature signals generated by [the each of] the other signature generators included in each of the [other] plurality of signature sources and

b) a transmitter [for] coupled to the signature generator and transmitting the signature signal [generated by the signature generator] to a receiver that is located at a remote location;

a receiver located at the remote location [for] receiving the signature signals transmitted by the [transmitters] transmitter included in each of said plurality of signature sources; and

a [demultiplexer for] demultiplexer coupled to the receiver and generating a plurality of output signals each output signal corresponding to a different one of the signature signals generated by said plurality of signature sources.

--14. (Amended) A communication [The] system as set forth in claim 13 [above], wherein said system provides for communication of signature signals to the remote location.

--15. (Amended) A communication [The] system as set forth in claim 13 [above], wherein said system provides for location of said plurality of [transmitters] signature sources; said system further comprising a location processor [for] coupled to the demultiplexer, processing the plurality of output signals [generated by said demultiplexer to determine] and determining

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the location of a least one of said [transmitters] <u>signature sources</u>.

--16. (Amended) <u>A communication</u> [The] system as set forth in claim 13 [above], wherein said system provides for location of said receiver; said system further comprising a location processor [for] <u>coupled</u> <u>to</u> <u>the</u> <u>demultiplexer</u> <u>and</u> processing the plurality of output signals [generated by said demultiplexor] to determine the location of said receiver.

--17. (Amended) <u>A communication</u> [The] system as set forth in claim 13 [above], wherein <u>the</u> <u>transmitter</u> <u>included</u> <u>in</u> each of said plurality of [transmitters] <u>signature sources</u> includes a radio transmitter [for] <u>coupled</u> <u>to</u> <u>the</u> <u>signature generator</u> <u>and</u> transmitting the signature signal [generated by the signature generator to which it is connected] to the remote location as a radio signal.

--18. (Amended) <u>A communication</u> [The] system as set forth in claim 13 [above], wherein <u>the</u> <u>transmitter</u> <u>included</u> <u>in</u> each of said plurality of [transmitters] <u>signature sources</u> includes a seismic transmitter [for] <u>coupled</u> <u>to</u> <u>the</u> <u>signature generator</u> <u>and</u> transmitting the signature signal [generated by the signature generator to which it is connected] to the remote location as a seismic signal.

--19. (Amended) <u>A communication</u> [The] system as set forth in claim 13 [above], wherein <u>the</u> <u>transmitter</u> <u>included</u> <u>in</u> each of said plurality of [transmitters] <u>signature sources</u> includes an acoustic transmitter [for] <u>coupled</u> <u>to</u> <u>the</u> <u>signature generator</u> <u>and</u> transmitting the signature signal [generated by the signature generator to which it is connected] to the remote location as an acoustic signal.

--20. (Amended) A communication system [for receiving a plurality of input signature signals each transmitted from a different remote location and each input signature signal having a signature that is different from the signature of each of the other input signature signals, said communication system] comprising:

an antenna [for] receiving [the] a plurality of input signature signals, wherein each input signature signal is transmitted from a different remote location, and wherein each signature signal [having] has a signature that is different from the signature of each of the other input signature signals [transmitted from the different remote locations];

an amplifier circuit [for] coupled to the antenna and amplifying the plurality of input signature signals [received by said antenna];

a digital sampling circuit [for] coupled to the amplifier circuit and generating digital input signature signal samples by sampling the plurality of input signature signals amplified by said amplifier circuit;

an input memory [for] coupled to the digital sampling circuit and storing the digital input signature signal samples [generated by said digital sampling circuit];

a plurality of digital correlators, wherein each of said digital correlators includes

    a)   a digital reference memory [for] storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators [,] and

    b)   a correlator circuit [for] coupled to the digital reference memory and to the input memory and generating digital correlated output signal samples by correlation filtering of the digital input signature

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signal samples stored by said input memory in response to the digital reference signature signal samples; [stored by said digital reference memory, and]

[c)] an output memory [for] <u>coupled to the correlator circuit and</u> storing the digital correlated output signal samples [generated by said correlator circuit];

an integrated circuit stored program computer [for] <u>coupled to the output memory and</u> generating an output signal [under control of a stored program] <u>in response to the digital correlated output signal samples stored by the output memory,</u> said integrated circuit stored program computer including

a) an integrated circuit read only memory [for] storing a computer program,

b) an integrated circuit processing circuit [for processing] <u>coupled to the output memory and to the integrated circuit read only memory and generating processed output signal samples in response to</u> the digital correlated output signal samples stored by said output memory [in each of said digital correlators under control of] <u>and in response to</u> the computer program [stored by said integrated circuit read only memory], and

c) an integrated circuit output circuit [for] <u>coupled to the integrated circuit processing circuit and</u> generating an output display signal in response to the [processing of the digital correlated] output signal samples [by said integrated circuit processing circuit under control of] <u>in response to</u> the computer program [stored by said integrated circuit read only memory]; and

an operator display [for] <u>coupled</u> <u>to</u> <u>the</u> <u>integrated</u> <u>circuit</u> <u>output</u> <u>circuit</u> <u>and</u> displaying information [to an operator] in response to the output display signal [generated by said computer output circuit].

--21. (Amended) A communication system comprising:

a digital processor [for] generating a plurality of digital signals;

a signature generator [for] <u>coupled</u> <u>to</u> <u>the</u> <u>digital</u> <u>processor</u> <u>and</u> generating a signature signal in response to each of the plurality of digital signals [generated by said digital processor], where each [of the] signature [signals] <u>signal</u> has a signature that is different from the signature of each of the other signature signals;

a [multiplexor for] <u>multiplexer</u> <u>coupled</u> <u>to</u> <u>the</u> <u>signature</u> <u>generator</u> <u>and</u> generating a multiplexed signature signal by combining the signature signals generated by said signature generator;

a transmitter [for] <u>coupled</u> <u>to</u> <u>the</u> <u>multiplexer</u> <u>and</u> transmitting the multiplexed signature signal [generated by said multiplexor] to a remote location;

a receiver located at the remote location [for] <u>and</u> receiving the multiplexed signature signal transmitted by said transmitter; and

a [demultiplexor for] <u>demultiplexer</u> <u>located</u> <u>at</u> <u>the</u> <u>remote</u> <u>location,</u> <u>coupled</u> <u>to</u> <u>the</u> <u>receiver,</u> <u>and</u> generating a plurality of digital signals, each <u>of</u> <u>the</u> <u>plurality</u> <u>of</u> <u>digital</u> <u>signals</u> corresponding to a different one of the plurality of digital signals [generated by said digital processor].

--22. (Amended) <u>A</u> <u>communication</u> [The] system as set forth in claim 21 [above], wherein said system provides for communication of <u>the</u> <u>plurality</u> <u>of</u> digital signals to [the] <u>a</u> remote location; wherein said <u>system</u> <u>further</u> <u>comprises</u> <u>a</u> digital [processor includes a] location processor [for] <u>coupled</u> <u>to</u> <u>the</u> <u>demultiplexer</u> <u>and</u> generating [the] <u>a</u> plurality of [digital]

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location signals [to be communicated to the remote location; and wherein said signature generator includes a signature circuit for generating the signature signal in response to each of the plurality of digital signals generated by said digital processor by modulating the digital signals with a signature signal for communication to the remote location].

--23. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said system provides for location of said transmitter; said system further comprising an output processor [for] coupled to the demultiplexer and processing the plurality of digital signals [generated by said demultiplexor] to determine the location of said transmitter.

--24. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said system provides for location of said receiver; said system further comprising a location processor [for] coupled to the demultiplexer and processing the plurality of digital signals [generated by said demultiplexor] to determine the location of said receiver.

--25. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said [digital processor includes] system further comprises a stored program digital computer [for] coupled to the demultiplexer and generating [the] a plurality of [digital] output signals in response to [processing of] the digital [information] signals.

--26. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said signature generator includes a plurality of signature generators each generating a signature different from the signatures of the other signature generators in response to the plurality of digital signals [generated by said digital processor].

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--27. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said [multiplexor] multiplexer includes [means for] a combining circuit coupled to the receiver and generating the multiplexed signature signal by combining the signature signals generated by said signature generator with wired circuit connections.

--28. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said transmitter includes a radio transmitter [for] coupled to the multiplexer and transmitting the multiplexed signature signal [generated by said multiplexor] to the remote location as radio signals.

--29. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said transmitter includes a seismic transmitter [for] coupled to the multiplexer and transmitting the multiplexed signature signal [generated by said multiplexor] to the remote location as seismic signals.

--30. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said transmitter includes an underwater acoustic transmitter [for] coupled to the multiplexer and transmitting the multiplexed signature signal [generated by said multiplexor] to the remote location as underwater acoustic signals.

--31. (Amended) A communication [The] system as set forth in claim 21 [above], wherein said [demultiplexor] demultiplexer includes a plurality of digital correlators each [for] generating a different one of the plurality of digital signals and each corresponding to a different one of the plurality of digital signals generated by said digital processor.

--32.   (Amended)   A communication system comprising:

an antenna [for] receiving [a] an input signature signal;

an amplifier circuit [for amplifying] coupled to the antenna and generating an amplified signature signal in response to the input signature signal [received by said antenna];

a digital sampling circuit [for] coupled to the amplifier and generating digital input signature signal samples by sampling the [input] amplified signature signal [amplified by said amplifier circuit];

an input memory [for] coupled to the digital sampling circuit and storing the digital input signature signal samples [generated by said digital sampling circuit];

a plurality of digital correlators, wherein each of said digital correlators includes

a)   a digital reference memory [for] storing digital reference signature signal samples having a signature that is different from the signatures of the digital reference signature samples stored by the digital reference memories in each of the other digital correlators [,] and

b)   a digital correlator circuit [for] coupled to the input memory and to the digital reference memory and generating digital correlated output signal samples by correlation filtering [of] the digital input signature signal samples stored by said input memory in response to the digital reference signature signal samples [stored by said digital reference memory], said digital correlator circuit including a multiplier circuit [for] generating product signal samples by multiplying the input signature signal samples stored by said input memory with digital reference signature signal samples

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[stored by said digital reference memory] and
an adder circuit [for] generating [each of]
the digital correlated output signal samples
by adding together product signal samples;
[generated by said multiplier circuit, and]

[c)] an output memory [for] coupled to the digital
correlator circuit in each of the plurality of digital
correlators and storing the digital correlated output signal
samples [generated by said digital correlator circuit];

an integrated circuit stored program computer [for]
generating an output signal [under control of a stored program]
in response to the digital correlated output signal samples, said
integrated circuit stored program computer including

    a)   an integrated circuit read only memory [for]
        storing a computer program,

    b)   an integrated circuit processing [logic for
        processing] circuit coupled to the output
        memory and to the integrated circuit read
        only memory and generating processed output
        signal signals in response to the digital
        correlated output signal samples stored by
        said output memory [in each of said digital
        correlators under control of] and in response
        to the computer program [stored by said
        integrated circuit read only memory], and

    c)   an integrated circuit output [logic for]
        circuit coupled to the integrated circuit
        processing circuit and generating an output
        display signal in response to the [processing
        of the digital correlated] processed output
        signal samples [by said integrated circuit
        processing logic under control of] and in
        response to the computer program [stored by
        said integrated circuit read only memory];
        and

an operator display [for] <u>coupled</u> <u>to</u> <u>the</u> <u>integrated</u> <u>circuit</u> <u>output</u> <u>circuit</u> <u>and</u> displaying information [to an operator] in response to the output display signal [generated by said computer output circuit].

--33. (Amended) A communication system comprising:

a plurality of signature generators each [for] generating a signature signal, where each of the signature signals has a signature that is different from the signature of each of the other signature signals and where the signature signals generated by said plurality of signature generators overlap therebetween;

a plurality of transmitters each [connected] <u>coupled</u> to a different one of said plurality of signature generators [for] <u>and</u> transmitting the signature signal generated by the signature generator to which it is [connected] <u>coupled</u> to a remote location;

a receiver located at the remote location [for] <u>and</u> receiving the overlapping signature signals transmitted by said plurality of transmitters; and

a [demultiplexor for] <u>demultiplexer</u> generating a plurality of output signals each corresponding to a different one of the plurality of overlapping signature signals generated by said plurality of signature generators.

--34. (Amended) <u>A</u> <u>communication</u> [The] system as set forth in claim 33 [above], wherein said system provides for communication of signature signals to the remote location.

--35. (Amended) <u>A</u> <u>communication</u> [The] system as set forth in claim 33 [above], wherein said system provides for location of said plurality of transmitters; said system further comprising a processor [for] <u>coupled</u> <u>to</u> <u>the</u> <u>demultiplexer</u> <u>and</u> processing the plurality of output signals [generated by said demultiplexor] to determine the location of a least one of said transmitters.

--36. (Amended) A <u>communication</u> [The] system as set forth in claim 33 [above], wherein said system provides for location of said receiver; said system further comprising a processor [for] <u>coupled</u> <u>to</u> <u>the</u> <u>demultiplexer</u> <u>and</u> processing the plurality of output signals [generated by said demultiplexor] to determine the location of said [receivor] <u>receiver</u>.

--37. (Amended) A <u>communication</u> [The] system as set forth in claim 33 [above], wherein each of said plurality of transmitters includes a radio transmitter [for] transmitting the signature signal generated by the signature generator to which it is [connected] <u>coupled</u> to the remote location as a radio signal.

--38. (Amended) A <u>communication</u> [The] system as set forth in claim 33 [above], wherein each of said plurality of transmitters includes a seismic transmitter [for] transmitting the signature signal generated by the signature generator to which it is [connected] <u>coupled</u> to the remote location as a seismic signal.

--39. (Amended) A <u>communication</u> [The] system as set forth in claim 33 [above], wherein each of said plurality of transmitters includes an acoustic transmitter [for] transmitting the signature signal generated by the signature generator to which it is [connected] <u>coupled</u> to the remote location as an acoustic signal.

--40. (Amended) A <u>communication</u> [The] system as set forth in claim 33 [above] wherein said [demultiplexor] <u>demultiplexer</u> includes a plurality of digital correlators each [for] <u>digital</u> <u>correlator</u> generating a different one of the plurality of output signals and each <u>digital</u> <u>correlator</u> corresponding to a different one of the plurality of signature signals generated by said plurality of signature generators.

[Add new claims 41-58 as follows.]

--41. A filter processor system comprising:

an analog input device generating an analog input signal;

an analog to digital converter coupled to the analog input device and generating digital signal samples in response to the analog input signal; and

a single integrated circuit chip stored program digital computer coupled to the analog to digital converter and generating digital output signal samples in response to the digital signal samples, wherein the single integrated circuit chip stored program digital computer is implemented on a single integrated circuit chip, and wherein the single integrated circuit chip stored program digital computer includes

a) an integrated circuit read only memory storing a computer program, wherein the integrated circuit read only memory is implemented on the single integrated circuit chip,

b) an integrated circuit input circuit coupled to the integrated circuit read only memory and to the analog to digital converter and generating input signal samples in response to the digital signal samples and in response to the computer program, wherein the integrated circuit input circuit is implemented on the single integrated circuit chip,

c) an integrated circuit random access memory storing computer signal samples, wherein the integrated circuit random access memory is implemented on the single integrated circuit chip,

d) an integrated circuit writing circuit coupled to the integrated circuit read only memory,

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the integrated circuit input circuit, and the integrated circuit random access memory and writing the computer signal samples to the integrated circuit random access memory in response to the input signal samples and in response to the computer program, wherein the integrated circuit writing circuit is implemented on the single integrated circuit chip,

e) an integrated circuit accessing circuit coupled to the integrated circuit random access memory and to the integrated circuit read only memory and accessing computer signal samples stored by the integrated circuit random access memory in response to the computer program, wherein the integrated circuit accessing circuit is implemented on the single integrated circuit chip,

f) an integrated circuit processing circuit coupled to the integrated circuit accessing circuit and to the integrated circuit read only memory and generating filter processed signal samples by filter processing the computer signal samples accessed by the integrated circuit accessing circuit in response to the computer program, wherein the integrated circuit processing circuit is implemented on the single integrated circuit chip, and

g) an integrated circuit output circuit coupled to the integrated circuit processing circuit and to the integrated circuit read only memory and generating the digital output signal samples in response to the filter processed signal samples and in response to the computer program, wherein the integrated

circuit output circuit is implemented on the single integrated circuit chip.

--42. A filter processor system as set forth in claim 41, further comprising:

a sound circuit coupled to the integrated circuit output circuit and generating an electrical sound signal in response to the digital output signal samples and

a sound transducer coupled to the sound circuit and generating an acoustic sound in response to the electrical sound signal.

--43. A filter processor system as set forth in claim 41, further comprising:

a display circuit coupled to the integrated circuit output circuit and generating a display signal in response to the digital output signal samples and

a display monitor coupled to the display circuit and generating a display in response to the display signal.

--44. A filter processor system as set forth in claim 41, further comprising a digital to analog converter circuit coupled to the integrated circuit output circuit and generating an analog output signal in response to the digital output signal samples.

--45. A filter processor system as set forth in claim 41, wherein the integrated circuit output circuit is an integrated circuit serial output circuit generating the digital output signal samples as serial digital output signal samples in response to the in response to the filter processed signal samples and in response to the computer program.

--46. A filter processor system as set forth in claim 41, wherein the analog to digital converter generates the digital signal samples as serial digital signal samples and wherein the integrated circuit input circuit is an integrated circuit serial
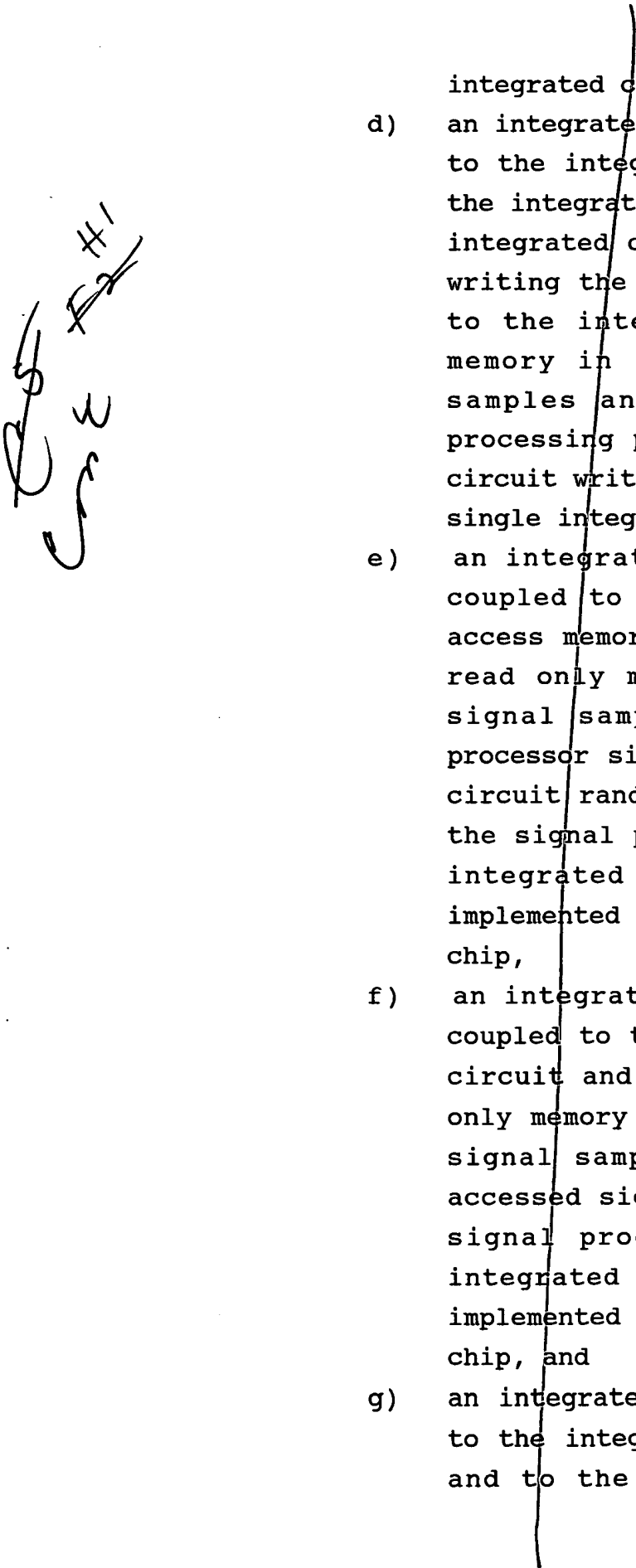
input circuit coupled to the integrated circuit read only memory and to the analog to digital converter and generating the input signal samples in response to the serial digital signal samples and in response to the computer program.

--47. A receiver system comprising:

an antenna generating an antenna signal;

an amplifier coupled to the antenna and generating an amplified signal in response to the antenna signal;

a sampling circuit coupled to the amplifier and generating received signal samples in response to the amplified signal; and

a single integrated circuit chip signal processor coupled to the amplifier and generating output signal samples in response to the received signal samples, wherein the single integrated circuit chip signal processor is implemented on a single integrated circuit chip, and wherein the single integrated circuit chip signal processor includes

a) an integrated circuit read only memory storing a signal processing program, wherein the integrated circuit read only memory is implemented on the single integrated circuit chip,

b) an integrated circuit input circuit coupled to the integrated circuit read only memory and to the sampling circuit and generating input signal samples in response to the received signal samples and in response to the signal processing program, wherein the integrated circuit input circuit is implemented on the single integrated circuit chip,

c) an integrated circuit random access memory storing signal processor signal samples, wherein the integrated circuit random access memory is implemented on the single

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integrated circuit chip,

d) an integrated circuit writing circuit coupled to the integrated circuit read only memory, the integrated circuit input circuit, and the integrated circuit random access memory and writing the signal processor signal samples to the integrated circuit random access memory in response to the input signal samples and in response to the signal processing program, wherein the integrated circuit writing circuit is implemented on the single integrated circuit chip,

e) an integrated circuit accessing circuit coupled to the integrated circuit random access memory and to the integrated circuit read only memory and generating accessed signal samples by accessing the signal processor signal samples from the integrated circuit random access memory in response to the signal processing program, wherein the integrated circuit accessing circuit is implemented on the single integrated circuit chip,

f) an integrated circuit processing circuit coupled to the integrated circuit accessing circuit and to the integrated circuit read only memory and generating filter processed signal samples by filter processing the accessed signal samples in response to the signal processing program, wherein the integrated circuit processing circuit is implemented on the single integrated circuit chip, and

g) an integrated circuit output circuit coupled to the integrated circuit processing circuit and to the integrated circuit read only

memory and generating the output signal samples
in response to the filter processed signal
samples and in response to the signal
processing program, wherein the integrated
circuit output circuit is implemented on the
single integrated circuit chip.

--48. A receiver system as set forth in claim 47, further
comprising:

a sound circuit coupled to the integrated circuit
output circuit and generating an electrical sound signal in
response to the output signal samples and

a sound transducer coupled to the sound circuit and
generating an acoustic sound in response to the electrical sound
signal.

--49. A receiver system as set forth in claim 47, further
comprising:

a display circuit coupled to the integrated circuit
output circuit and generating a display signal in response to the
output signal samples and

a display monitor coupled to the display circuit and
generating a display in response to the display signal.

--50. A filter processor system as set forth in claim 47,
further comprising a digital to analog converter circuit coupled
to the integrated circuit output circuit and generating an analog
output signal in response to the output signal samples.

--51. A receiver system as set forth in claim 47, wherein
the integrated circuit output circuit is an integrated circuit
serial output circuit generating the output signal samples as
serial digital output signal samples in response to the filter
processed signal samples and in response to the signal processing
program.

--52. A receiver system as set forth in claim 47, wherein the sampling circuit generates the received signal samples as serial digital received signal samples and wherein the integrated circuit input circuit is an integrated circuit serial input circuit coupled to the integrated circuit read only memory and to the sampling circuit and generating the input signal samples in response to the serial digital received signal samples and in response to the signal processing program.

--53. A digital signal processor comprising:

a single integrated circuit chip having a digital signal processor implemented thereon;

an integrated circuit read only memory storing a signal processor program, wherein the integrated circuit read only memory is implemented on the single integrated circuit chip;

an integrated circuit input circuit coupled to the integrated circuit read only memory and generating input signal samples in response to the signal processor program, wherein the integrated circuit input circuit is implemented on the single integrated circuit chip;

an integrated circuit random access memory storing signal processor signal samples, wherein the integrated circuit random access memory is implemented on the single integrated circuit chip;

an integrated circuit writing circuit coupled to the integrated circuit read only memory, the integrated circuit input circuit, and the integrated circuit random access memory and writing the signal processor signal samples to the integrated circuit random access memory in response to the input signal samples and in response to the signal processor program, wherein the integrated circuit writing circuit is implemented on the single integrated circuit chip;

an integrated circuit accessing circuit coupled to the integrated circuit random access memory and to the integrated circuit read only memory and accessing signal processor signal samples stored by the integrated circuit random access memory in

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response to the signal processor program, wherein the integrated circuit accessing circuit is implemented on the single integrated circuit chip;

an integrated circuit signal processing circuit coupled to the integrated circuit accessing circuit and to the integrated circuit read only memory and generating signal processed signal samples by signal processing the signal processor signal samples accessed by the integrated circuit accessing circuit in response to the signal processor program, wherein the integrated circuit processing circuit is implemented on the single integrated circuit chip; and

an integrated circuit output circuit coupled to the integrated circuit signal processing circuit and to the integrated circuit read only memory and generating the digital output signal samples in response to the signal processed signal samples and in response to the signal processor program, wherein the integrated circuit output circuit is implemented on the single integrated circuit chip.

--54. A digital signal processor as set forth in claim 53, further comprising:

a sound circuit coupled to the integrated circuit output circuit and generating an electrical sound signal in response to the output signal samples and

a sound transducer coupled to the sound circuit and generating an acoustic sound in response to the electrical sound signal.

--55. A digital signal processor as set forth in claim 53, further comprising:

a display circuit coupled to the integrated circuit output circuit and generating a display signal in response to the digital output signal samples and

a display monitor coupled to the display circuit and generating a display in response to the display signal.

--56. A digital signal processor as set forth in claim 53, further comprising a digital to analog converter circuit coupled to the integrated circuit output circuit and generating an analog output signal in response to the digital output signal samples.

--57. A digital signal processor as set forth in claim 53, wherein the integrated circuit output circuit is an integrated circuit serial output circuit generating the digital output signal samples as serial digital output signal samples in response to the filter processed signal samples and in response to the signal processing program.

--58. A digital signal processor as set forth in claim 53, wherein the integrated circuit input circuit is an integrated circuit serial input circuit coupled to the integrated circuit read only memory and generating the input signal samples as serial input signal samples and in response to the signal processing program.

2.1 AMENDMENTS TO THE CLAIMS

Cancel pages 1B to 1D as amended and substitute in place thereof the following.

--CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation in part of copending ancestor application FOURIER TRANSFORM PROCESSOR S/N 425,731 filed on September 28, 1982 and now U.S. Patent No. 4,581,715 issued on April 8, 1986 which is a continuation in part of each application in the following chain of ancestor patent applications having copendency therebetween:

(A) MEMORY SYSTEM USING FILTERABLE SIGNALS S/N 160,872 filed on June 19, 1980 by Gilbert P. Hyatt and now U.S. Patent No. 4,491,930 issued on January 1, 1985 and

(B) COMPUTER SYSTEM ARCHITECTURE S/N 860,257 filed December 14, 1977 by Gilbert P. Hyatt and now U.S. Patent No. 4,371,923 issued on February 1, 1983;

wherein said ancestor application S/N 160,872 is a continuation in part of each application in the following chain of ancestor patent applications having copendency therebetween:

(1) FACTORED DATA PROCESSING SYSTEM FOR DEDICATED APPLICATIONS S/N 101,881 filed on December 28, 1970 by Gilbert P. Hyatt; proceedings therein having been terminated;

(2) CONTROL SYSTEM AND METHOD S/N 134,958 filed on April 19, 1971 by Gilbert P. Hyatt; still pending in the PTO;

(3) CONTROL APPARATUS S/N 135,040 filed on April 19, 1971 by Gilbert P. Hyatt; still pending in the PTO;

(4) APPARATUS AND METHOD FOR PRODUCING HIGH REGISTRATION PHOTO-MASKS S/N 229,213 filed on April 13, 1972 by Gilbert P. Hyatt; now U.S. Patent No. 3,820,894 issued on June 28, 1974;

(5) MACHINE CONTROL SYSTEM OPERATING FROM REMOTE COMMANDS S/N 230,872 filed on March 1, 1972 by Gilbert P. Hyatt; now U.S. Patent No. 4,531,182 issued on July 23, 1985;

(6) COORDINATE ROTATION FOR MACHINE CONTROL SYSTEM S/N 232,459 filed on March 7, 1972 by Gilbert P. Hyatt; now U.S. Patent No. 4,370,720 issued on January 25, 1983;

(7) DIGITAL FEEDBACK CONTROL SYSTEM S/N 246,867 filed on April 24, 1972 and now U.S. Patent No. 4,310,878 by Gilbert P. Hyatt; issued on January 12, 1982;

(8) COMPUTERIZED SYSTEM FOR OPERATOR INTERACTION S/N 288,247 filed on Sept 11, 1972 by Gilbert P. Hyatt; now U.S. patent No. 4,121,284 issued on October 17, 1978;

(9) A SYSTEM FOR INTERFACING A COMPUTER TO A MACHINE S/N 291,394 filed on September 22, 1972 by Gilbert P. Hyatt; now U.S. Patent No. 4,396,976 issued on August 2, 1983;

(10) DIGITAL ARRANGEMENT FOR PROCESSING SQUAREWAVE SIGNALS S/N 302,771 filed on Nov 1, 1972 by Gilbert P. Hyatt; still pending in the PTO;

(11) APPARATUS AND METHOD FOR PROVIDING INTERACTIVE AUDIO COMMUNICATION S/N 325,933 filed on January 22, 1973 by Gilbert P. Hyatt; now U.S. Patent No. 4,016,540 issued on April 5, 1977;

(12) ELECTRONIC CALCULATOR SYSTEM HAVING AUDIO MESSAGES FOR OPERATOR INTERACTION S/N 325,941 filed on January 22, 1973 by Gilbert P. Hyatt; now U.S. Patent No. 4,060,848 issued on November 29, 1977;

(13) ILLUMINATION CONTROL SYSTEM S/N 366,714 filed on June 4, 1973 by Gilbert P. Hyatt; now U.S. Patent No. 3,986,922 issued on October 12, 1976;

(14) DIGITAL SIGNAL PROCESSOR FOR SERVO VELOCITY CONTROL S/N 339,817 filed on March 9, 1973 by Gilbert P. Hyatt; now U.S. Patent No. 4,034,276 issued on July 5, 1977;

(15) MONOLITHIC DATA PROCESSOR WITH MEMORY REFRESH S/N 402,520 filed on October 1, 1973 by Gilbert P. Hyatt; now U.S. Patent No. 4,825,364 issued on April 25, 1989;

(16) HOLOGRAPHIC SYSTEM FOR OBJECT LOCATION AND IDENTIFICATION S/N 490,816 filed on July 22, 1974 by Gilbert P. Hyatt; now U.S. Patent No. 4,029,853 issued on June 24, 1980;

(17) COMPUTERIZED MACHINE CONTROL SYSTEM S/N 476,743 filed on June 5, 1974 by Gilbert P. Hyatt; now U.S. Patent No. 4,364,110 issued on December 14, 1982;

(18) SIGNAL PROCESSING AND MEMORY ARRANGEMENT S/N 522,559 filed on November 11, 1974 by Gilbert P. Hyatt; now U.S. Patent No. 4,209,852 issued on June 24, 1980;

(19) METHOD AND APPARATUS FOR SIGNAL ENHANCEMENT WITH IMPROVED DIGITAL FILTERING S/N 550,231 filed on February 14, 1975 by Gilbert P. Hyatt; now U.S. Patent No. 4,209,843 issued on June 24, 1980;

(20) ILLUMINATION SIGNAL PROCESSING SYSTEM S/N 727,330 filed on September 27, 1976 by Gilbert P. Hyatt; now abandoned;

(21) PROJECTION TELEVISION SYSTEM USING LIQUID CRYSTAL DEVICES S/N 730,756 filed on October 7, 1976 by Gilbert P. Hyatt; now abandoned;

(22) INCREMENTAL DIGITAL FILTER S/N 754,660 filed on December 27, 1976 by Gilbert P. Hyatt; now U.S. patent No. 4,486,850 issued on December 4, 1984;

(23) MEANS AND METHOD FOR COMPUTERIZED SOUND SYNTHESIS S/N 752,240 filed on December 20, 1976 by Gilbert P. Hyatt; now abandoned;

(24) VOICE SIGNAL PROCESSING SYSTEM S/N 801,879 filed on May 13, 1977 by Gilbert P. Hyatt; now U.S. patent No. 4,144,582 issued on March 13, 1979;

(25) ANALOG READ ONLY MEMORY S/N 812,285 filed on July 1, 1977 by Gilbert P. Hyatt; now U.S. Patent No. 4,371,953 issued on February 1, 1983;

(26) DATA PROCESSOR ARCHITECTURE S/N 844,765 filed on October 25, 1977 by Gilbert P. Hyatt; now U.S. patent No. 4,523,290 issued on June 11, 1985;

(27) DIGITAL SOUND SYSTEM FOR CONSUMER PRODUCTS S/N 849,812 filed on November 9, 1977 by Gilbert P. Hyatt; still pending in the PTO;

(28) ELECTRO-OPTICAL ILLUMINATION CONTROL SYSTEM S/N 860,278 filed on December 13, 1977 by Gilbert P. Hyatt; now U.S. Patent No. 4,471,385 issued on September 11, 1984; and

(29) MEMORY SYSTEM HAVING SERVO COMPENSATION S/N 889,301 filed on March 23, 1978 by Gilbert P. Hyatt; now U.S. Patent No. 4,322,819 issued on March 30, 1982;

where all of the above listed patents and patent applications are incorporated herein by reference as if fully set forth at length herein;

where one skilled in the art will be able to combine the disclosures in said applications and patents that are incorporated by reference with the disclosure in the instant application from the disclosures therein and the disclosures herein;

where this application is further a continuation in part of ancestor applications

(30) A TRANSDUCER HAVING A VERNIER FOR IMPROVED PRECISION S/N 342,611 filed on January 25, 1982 by Gilbert P. Hyatt, et al and still pending in the PTO and

(31) INTELLIGENT TRANSDUCER S/N 342,579 filed on January 25, 1982 by Gilbert P. Hyatt and now U.S. Patent No. 4,870,559 issued on September 26, 1989

where the benefit of the filing dates of all of the above-listed patent applications are herein claimed in accordance with the United States Code such as with 35 USC 120 and 35 USC 121 and other authorities provided therefore.--

Page 10A inbetween lines 5 and 6, insert the following paragraph.

--A preferred embodiment disclosing coupling and connection of circuits, devices, and elements is provided in the discussions, in the tables, and in the figures herein. For example; a source circuit, device, or element generates a source signal and a distination circuit, device, or element is coupled to the source circuit, device, or element and operates in response to the source signal.--

Page 10A at line 36, change "multidudes" to --multitudes--.
Page 28 at line 1, change "an" to --a--.
Page 91 at line 6, change "implicitely" to --implicitly--.
Page 147 at line 19, change "with" to --by--.
Page 309 at line 17, after "again" insert --are--.